

ARTICULATIONS

An articulation or joint, is a place where two or more skeletal elements come together. Arthrology is the study of joints.

In the laboratory, joint movements can be demonstrated by referring to the mounted human skeleton or by making specific movements on your own bodies. Often the latter is preferable, since your bones are not wired together and you don't have a metal rod running the length of your vertebral column. In order to study the joints intelligently, a familiarity with the names and parts of bones is essential.

It is a common misconception that a joint is always movable. As a matter of fact, most joints are only slightly moveable (often the movement is impossible to detect) or totally immovable. There are many ways in which a joint can be classified, but we will restrict the classification to seven different types of joints.

The seven types of joints are:

- Immovable
- Gliding
- Hinge
- Pivot
- Ellipsoidal
- Saddle
- Ball-and-socket

IMMOVABLE JOINT

An immovable joint will be classified as immovable or slightly movable. The degree of movement is almost imperceptible.

*Examples:*     Sutures – bones joined by a thin layer of connective tissue, found only in the skull.

Pubic symphysis – between the two pubic bones of the pelvic girdle.

GLIDING JOINT

A gliding joint consists of flat articulating surfaces which move side to side or forward and back on one another, allowing highly restricted biaxial movement.

*Examples:*     Between adjacent carpal bones of the wrist and tarsal bones of the ankle.

                  Between the facet joints of the vertebrae.

### HINGE JOINT

A hinge joint is one where the convex surfaces of one bone fits into the concave surface of another in such a way that movement in one plane is allowed.

*Examples:* Elbow – between the distal end of the humerus and the proximal end of the ulna.

Interphalangeal joints – between the adjacent phalanges of the fingers or toes.

### PIVOT JOINT

A pivot joint is a type of joint where one bone turns on another, allowing monaxial movement.

*Examples:* Between the atlas and axis.

Between the proximal and distal ends of the radius and humerus.

### ELLIPSOIDAL JOINT

An ellipsoidal joint is a joint where the spherical head of one bone fits into an elliptical cavity, allowing movement in two planes.

*Examples:* Between the atlas of the vertebral column and the occipital condyle.

Between the radius and ulna and their adjacent carpals (wrist joint).

### SADDLE JOINT

A saddle joint is the type of joint where the concave surface of one bone fits over the convex surface of another, allowing biaxial movement.

*Example:* Between the first metacarpal (thumb) and the wrist.

### BALL-AND-SOCKET JOINT

A ball-and-socket joint is the type of joint where the rounded head of one bone fits into a capsule of another, allowing movement in three planes.

*Example:* Hip – between the proximal end of the femur and the acetabulum.

Shoulder – between the proximal end of the humerus and the glenoid process.

1. Complete the following chart on the type of joints:

### TYPES OF JOINTS

TYPES OF JOINTS	TYPE OF MOVEMENT	EXAMPLES
IMMOVABLE		
GLIDING		
HINGE		
PIVOT		
ELLIPSOIDAL		
SADDLE		
BALL AND SOCKET		

- What special name is given to the first cervical vertebra?
- What type of joint is found between the cranium and the atlas?
- What is the name of the second cervical vertebra?
- What type of joint is found between the atlas and the axis?
- What is the dens on the axis and what do you think its function is?
- Complete the following chart on the types of vertebrae?

### TYPES OF VERTEBRAE

NAME OF VERTEBRA	# OF VERTEBRAE	LOCATION
CERVICAL		
THORACIC		
LUMBAR		
SACRAL		
COCCYGEAL (COCCYX)		

8. Complete the following chart on parts of a vertebra.

PARTS OF A VERTEBRA	
PART OF VERTEBRA	DESCRIPTION/LOCATION/FUNCTION
TRANSVERSE PROCESS	
VERTEBRAL FORAMEN	
DORSAL SPINAL PROCESS	
SUPERIOR ARTICULAR PROCESS	
INTERVERTEBRAL DISC	

9. What is kyphosis?

lordosis?

scoliosis?

10. On the human skeleton identify and distinguish between the following:

a. true ribs

b. false ribs

c. floating ribs

11. What and where is the costal cartilage?

12. What and where are the three regions of the sternum?

a.

b.

c.

13. What type of joint is found between the vertebrae?